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FIN

# Wayne
# Lifeguard Bus Press Kit

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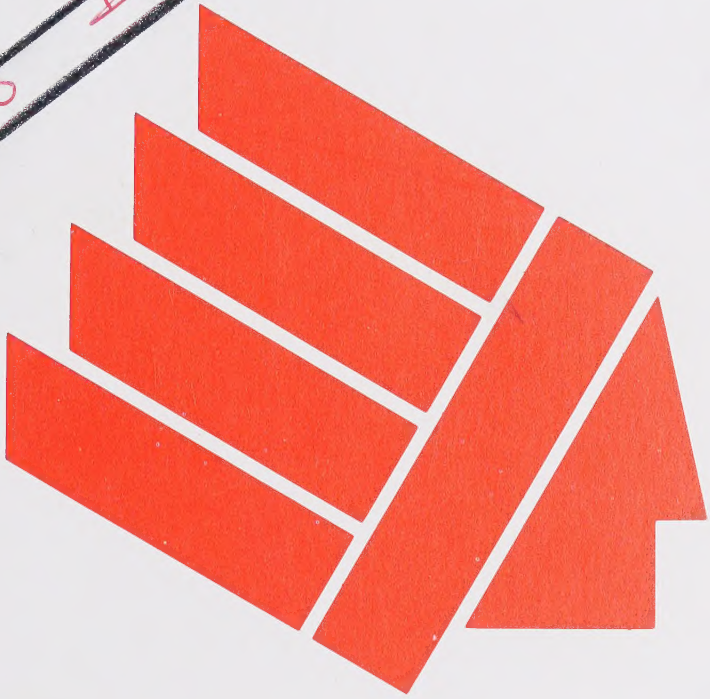

## Indian Head

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# FACTS AND

# BACKGROUND

## WAYNE LIFEGUARD SCHOOL BUS

## THE GROWING PUBLIC INTEREST IN STUDENT TRANSPORTATION

One of the hottest subjects around today, as you know, is the matter of school bus safety. The news media are giving it much attention. Most every time school bus passengers are injured or killed, it tends to get front-page treatment. Safety groups and commissions are highly active. Local, provincial and federal groups are working on stringent new regulations. Public clamor for greater protection of students intensifies with every single instance of injury or fatality.

## SCHOOL BUS ACCIDENTS ON THE INCREASE

This growing concern for greater school bus safety is quite understandable because -- while school buses have one of the best safety records of any vehicles on the roads -- school bus accidents *are* on the increase.

One thing is sure -- the traffic on our highways is far heavier than it was a few years ago. More and more school buses are operating in areas that bear no resemblance to the quiet country roads of the past.

School buses can never be too safe for their precious cargo. Many of the school buses on the road today are old and outmoded. Many of the buses are overcrowded. And there are great *differences* in the safety provided by the *new* school buses being offered today.

Of course, *student transportation safety* is a broad subject. It takes a lot of things to get Johnny and Mary to school safely.

* Careful selection and training of drivers.
* Pupil instruction in safe school bus conduct.
* Periodic safety inspections of school buses, coupled with a comprehensive maintenance program.
* Education of the motoring public in driving procedures when school buses are encountered on the highways.
* Strict law enforcement as related to school bus safety, etc., etc.
* And, of course, *safely designed school buses* -- the vehicles that actually carry the children to and from school.

It takes all of these things to provide a real measure of safety ... and the key to success is teamwork.

## SAFETY PROBLEMS STUDIED

Four years ago, Wayne decided to develop a new school bus body that would offer far greater safety than school bus construction as it was known ... a bus designed for today's needs and tomorrows.

In-depth studies of school bus accidents, consultation with transportation specialists and analyses of communications from persons outside the industry, revealed a number of problems typical of school buses:

(1) Outside the buses, multiple side and roof seams were vulnerable in event of an accident. However well fastened, they could not withstand some types of impact. In some accidents,panels were tearing loose at the seams. Children have been thrown bodily through these gaping holes. Foreign objects have penetrated the passenger compartment, injuring or killing.

Two years ago, a national safety board issued a major report on the dangers of multiple exterior panel seams. No punches were pulled. The report was titled, "Inadequate Structural Assembly of School Bus Bodies." But Wayne was already two years into development of a design to eliminate such seams.

(2) Inside, the tragic consequences of multiple-small-panels construction was also evident. At the sides, crash loads had sometimes burst through the vertical junctions of exterior and interior panels, projecting their knife-like metal edges into the passenger compartment. At the roof, impacts from trees or utility poles had separated transverse roof panels at the seams, driving exposed metal edges down into the interior where passengers were thrown forward against the knife-like cutting edges.

(3) Frame structures of typical school buses lacked uniform strength and were vulnerable in various critical areas.

(4) With children getting bigger, compared with children of the same ages years ago, the window escape openings were much too small to allow quick and safe emergency exits in accident situations.

(5) Various injuries were occurring because of a lack foam padding on seats and various other interior areas.

(6) Windshield sizes and mirror locations hampered driver visibility.

--- AND SO ON.

## DEVELOPMENT OF THE WAYNE LIFEGUARD BUS

Even though Wayne School Buses had traditionally been recognized for leadership in safety, Wayne engineers assigned to development of the new bus were told they could start from scratch, completely disregarding past bus design and production equipment.

They were told that the only limitations were that the final product must be clearly a major step forward -- must be provably better by performance testing -- must meet or exceed provincial and federal school bus safety standards and must be desirable in the marketplace.

Development has included the building of four successive prototypes, each representing a more advanced version ... thousands of miles of road testing ... and severe laboratory performance testing under a wide range of conditions at Wayne's Safety Design and Testing Center which has sophisticated facilities that permit accident simulation.

The fourth prototype was shown to governmental transportation officials.

## HIGHLIGHTS OF THE WAYNE LIFEGUARD BUS

### (1) FULL-LENGTH OUTER PANELS ELIMINATE UP TO 31 IMPACT-VULNERABILITY POINTS.

Multiple side and roof seams simply do not exist in the Lifeguard Bus.

At each side, the riders are protected by an immense one-piece exterior shield that extends from window to floor -- the entire length of the passenger compartment. Security of the pupils is further increased by rugged, one-piece, full-length guard rails applied over the outer paneling and Huckbolted through the one-piece bow frame members.

On the roof, three big full-length panels cover the entire bus from front to back.

At sides and roof, the passenger compartment of the Wayne Lifeguard Bus has 5 exterior panels where yesterday's typical construction had as many as 34.

Elimination of the multitude of seams is only part of the story. The continuous longitudinal panels and guard rails greatly increase the strength and unity of the body. Crash loads at any point of impact are resisted the entire length of the body structure. This minimizes the danger and maximizes the protection for each and every passenger.

### (2) SHARP CUTTING EDGES OF INTERIOR SEAM FAILURE ARE ELIMINATED.

Inside the Lifeguard Bus, the continuous strength of massive, full-length panels lines the entire passenger area, from windows to floor.

Instead of up to 11 interior panels (usually one per seat) found in yesterday's construction, Lifeguard lines each side from window to floor with just two full-length shields.

Instead of hanging up to 12 transverse panels from the roof the way its done in outmoded construction, the entire roof is lined with just 6 big panels.

Lifeguard's safer passenger environment doesn't stop with the elimination of seams. Protection is also increased because the longitudinal interior roof seam is located midway between the two seams of the exterior roof paneling. If an impact should ever split an exterior roof seam, the interior paneling directly beneath provides strong protection because the longitudinal exterior and interior roof seams are staggered. The result is a double shield of continuous protection.

Yesterday's passenger compartment interior construction allowed up to 20 vertical seams between the side panels, up to 35 between the roof panels ... a total of 55 seams. Lifeguard replaces these with just 5 seams. Lifeguard's bigger panels reduce the number of seams by as much as 91%.

## (3) TOTALLY NEW FRAME PROVIDES MORE UNIFORM STRENGTH -- AND THE HEAVIEST GAUGE STRUCTURALS OF ANY SCHOOL BUS ON THE ROAD TODAY.

New one-piece bow frames, beside and over each seat, are strongly anchored at each side and are directly above a main cross member of the floor.

Full-length 14-gauge crash shields from floor to seat level, safeguard the passengers.

Extra-sturdy floor structure -- with heavy-gauge cross members every 9 inches -- provide massive permieter strength against crash forces.

Seven rows of longitudinal girders combine with the arching bow frame members to form a rugged steel canopy that provides more roll-over protection.

And at each corner of the body -- where impacts frequently occur -- the Lifeguard Bus has double-post construction.

## (4) LARGER ESCAPE OPENING BESIDE EACH SEAT.

Lifeguard windows are 36% larger than yesterday's bus design, allowing today's taller and broader children faster, easier escape in event of an accident. The new escape opening is 12.2 inches deep compared with the outmoded opening of only 9.1 inches.

By law, the bottom sash of school bus passenger windows is stationary. This is to discourage children from sticking their heads and arms out the windows. To further discourage such behavior, Lifeguard's windows are designed so the top bar of the lowered sash is at a higher level than in previous buses and can be permanently stopped at any level.

## (5) SAFER INTERIOR ENVIRONMENT.

In addition to elimination of hazardous seams, numerous other features increase safety of the Lifeguard Bus interior.

Various protrusions have been eliminated. Tamper-proof lights over the windows are flush-mounted. Window latches are recessed. New door control has closed "U" handle rather than spindle projection. First aid kit is recessed in wall beside the driver.

## (5) SAFER INTERIOR ENVIRONMENT CONTINUED:

Numerous items, foam padded to soften impacts, are available. These include stanchions, stepwell shield, headguard over entrance and shoulder cushions.

Passenger seats with all-directional polyfoam padding and new high-back safety seats that help compartmentalize passengers and protect them against whiplash are also offered.

## (6) NUMEROUS FEATURES MAKE DRIVERS' JOB EASIER.

Bigger windshield (27% larger than any previous Wayne bus) increases visibility. Wiped area is 37% greater.

Largest driver's window on any school bus.

More convenient electrical console (for control of all lights, signals and heating and ventilating equipment) is mounted in front of the driver, with all switches at his fingertips. Console is illuminated from top, so no glare interferes with down-the-road visibility.

Advanced heating and defrosting system directs a greater airflow across the windshield and other glass areas, for faster defrosting and condensation control.

## (7) BETTER RUST-PROOFING FOR LASTING SAFETY.

This is accomplished by a combination of advanced coating, priming and final coating techniques. In addition, individual components are uniquely designed to eliminate water traps, permit fast drainage and prevent condensation.

PROFILE OF WELLES CORPORATION, LTD.

## WHO WE ARE AND WHAT WE MAKE

Welles Corporation, Ltd. is a leading Canadian manufacturer of school buses, serving its customers through a nation-wide network of distributors and is represented in all 10 provinces. It is also Canada's oldest manufacturer of student transportation equipment.

At its plant in Windsor, Ontario, Welles makes bus bodies -- all bearing the Wayne trademark -- mounts them on all makes of school bus chassis and delivers the complete buses.

The company, which has about 200 employees, produces buses for daily student transportation, teams and activities groups, physically handicapped pupils and other school needs. It also manufactures buses for charter service and a variety of other applications, in addition to delivery truck bodies.

As a division of Wayne Corporation, Welles benefits from the design, engineering and testing resources of its parent company which is the largest manufacturer of school buses in the United States.

Wayne's testing anddesign center is the most advanced in the school bus industry. An extensive array of sophisticated equipment enables Wayne safety engineers to speed introduction of new safety features. In developing the Lifeguard bus, everything from a component to an entire bus body was stressed, impacted or even destroyed under rigidly controlled conditions -- meticulously studied, measured, checked and rechecked by electronic sensors and monitors.

At this testing center, engineers can apply up to 80,000 lbs. of force to prototypes, delivering that crushing impact in as little as 3 milli-seconds or stretching that time to as much as half an hour. Space-age technology gave the development of Lifeguard precise duplication of accident forces ... repeatable again and again ... so those lessons in strength and safety could be translated into the greatest single school bus safety advance since introduction of the first all-steel bus.

Wayne Corporation is an Indian Head Company. Indian Head is broadly diversified in metal and automotive products, utilities and communications products, glass containers, specialty textiles and information technology, and operates 55 plants, employing over 18,000 people in Canada, 22 states of the U.S., and The Netherlands.

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**Welles Corporation,Ltd.**
An Indian Head Company

**A Division of Wayne Corporation**
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Telephone 519-945-6311

NOTE TO EDITOR: Please release no sooner than February 19. Thank you.

# REVOLUTIONARY NEW LIFEGUARD SCHOOL BUS ANNOUNCED FOR CANADA

Windsor, Ontario, February 19 -- A revolutionary new "Lifeguard" school bus designed to substantially reduce injuries in accidents is now in production in Canada after four years of testing, it was announced today by Welles Corporation, Ltd., Windsor, Ontario, a division of Wayne Corporation, an Indian Head Company.

This Wayne "school bus of tomorrow", which is being manufactured at the Welles plant, is the result of an extensive multi-million dollar program, the company reports.

It is even more advanced than the Lifeguard bus first introduced in the United States in 1973, when over 300 newspapers and major television networks reported what has been termed the greatest advancement in student transportation since the all-steel bus replaced wooden ones over 40 years ago, Welles officials stated.

In recent months, millions of miles of operation, including collisions, have substantiated the earlier testing of Lifeguard prototypes at Wayne's

advanced research center and have solidly confirmed the greater safety of this new type of construction, they said.

The Lifeguard bus goes far beyond current school bus safety standards, exceeding Provincial and C.S.A. Standards.

It is a total design concept based on engineering principles that provide passenger protection not possible by making piecemeal changes in traditionally built buses.

Previous buses had a multitude of panels inside and out, short-length panels that necessitated many joints and seams. Data compiled by Wayne, governmental groups and other safety organizations has documented the tragic consequences of that kind of construction. In accidents, under heavy impacts, such school bus bodies have lacked unity. The many seams have constituted vulnerability points. Crash loads have burst through the junctions of exterior and interior side and roof panels, projecting their knife-like metal edges into the passenger compartment where children have been thrown forward against them.

The Lifeguard bus shields the passenger compartment with full-length panels and eliminates every feasible seam and joint, inside and out.

Wayne statistics indicate that passenger compartments of traditionally built school buses have up to 92 short-length panels at sides and roof. The Lifeguard replaces these with just 15: five exterior and ten interior. This, according to Wayne, results in a stronger more impact-resistant school bus because crash loads at point of impact are resisted the entire length of the Lifeguard body structure.

## HAZARDOUS SEAMS ELIMINATED

Wayne also reports that traditionally built school buses have as many as 86 seams at paneling joints of the sides and roof. The Lifeguard bus has just seven, a reduction of 91%.

Outside, riders are protected by an immense one-piece shield that extends from windows to floorline and the entire length of the passenger compartment. On the roof, three full-length panels cover the bus from front to rear.

Inside, massive full-length panels line the entire passenger area of the Lifeguard, from windows to floor; and much larger overhead panels replace the multitude of panels typical of outmoded construction.

## NEW SAFETY FRAME

Still another major safety advancement is the Lifeguard's new frame structure. This rugged skeleton, which is the backbone of the bus body's strength, reportedly has the heaviest gauge structurals of any school bus on the road today.

One-piece bow frames, beside and over each seat, are anchored at both sides to massive one-piece crash shields that provide major structural strength against impact forces. At both front and rear corners, where school buses are often hit, strength has been boosted by double-post construction. Longitudinal structural members have been increased in number, and special design provides greater protection against roll-over.

## WINDOWS ONE-THIRD LARGER

Windows of the Lifeguard bus are a third larger than on other school buses, providing a more spacious escape opening beside each seat. Accident reports have indicated the need for this change, particularly since today's children are bigger than those of comparable ages some years ago. These new windows also discourage children from putting their heads and arms outside when the sash is lowered because the top bar of the lowered sash is at a higher level than in previous buses and can be permanently stopped at any desired level.

Lifeguard also has new push-out emergency exit windows. Hinged at the top, these windows swing outward, providing by far the largest window escape openings on any school bus. Whenever the window is unlatched, a buzzer alerts the driver.

## ACCIDENT PREVENTION FEATURES

To help prevent accidents, a number of Lifeguard features have been designed to assist the driver. For better visibility, the windshield has been made 27% larger than on any previous Wayne bus, and larger bottom-mounted wipers clear a 37% greater area. There is also more viewing area through the driver's side window which is said to be the largest on any school bus.

Controls for all lights, signals, heating and ventilating are located in a new forward-mounted console in front of the driver. The illuminated console is positioned so he can see every switch in a glance downward, and every control is at his fingertips.

## ELECTRONIC MONITORING

An optional new electronic solid-state monitoring system signals the driver if any of the exterior safety lights are malfunctioning. This enables him to immediately adjust his driving procedures and give substitute communications to the drivers of other vehicles. A pictorial representation of the bus on a display panel near the driver has light-emitting diodes (miniature lamps) at the light locations. The diodes mimic the operation of the exterior lights.

## SAFETY-DESIGNED INTERIOR

In addition to elimination of hazardous seams, numerous other features increase safety of the Lifeguard interior. Protrusions have been eliminated, lights flush-mounted and window latches recessed. New foam-padded stanchions, driver's guard rail, stepwell shield and shoulder cushions are available to soften impacts.

Passenger seats with all-directional polyfoam padding and new high-back safety seats that help compartmentalize passengers and protect them against whiplash are also offered.

Other Lifeguard highlights include better rust-proofing; a new heavy-duty heating, ventilating and defrosting system; a large number of easy maintenance features designed to reduce upkeep costs, and a broad range of optional equipment.

Wayne management stated that although Wayne school buses have traditionally been recognized for leadership in safety, the engineers assigned to

design the Lifeguard bus were told they could start from scratch, completely disregarding past bus design and production equipment. The only limitations were that the final product be clearly a major step forward, be provably better by performance testing, meet or exceed Provincial and C.S.A. school bus safety standards, and be desirable and competitive in the marketplace. The Lifeguard bus has achieved all of these goals, the company stated.

The Lifeguard bus is backed by severe laboratory testing under a wide range of conditions at Wayne's Safety Design and Testing Center. Sophisticated facilities at the center permit simulation of bus-automobile crashes with forces up to 80,000 pounds, with sensitive electronic instruments measuring the crushing impacts. The bus has also been subjected to millions of miles of road testing over rugged terrain and has proved its greater safety in accidents.

Lifeguard could not have been built within the previously existing limitations of any manufacturing plant in the industry, according to Wayne. New techniques have demanded new operations and unique new machinery that simply did not exist. Wayne has designed and perfected a whole new production system. The bus is available in both standard and high headroom models designed for mounting on all makes of conventional school bus chassis.

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products, utilities and communications products, glass containers, specialty textiles and information technology, and operates 55 plants, employing over 18,000 people in Canada, 22 states in the U.S., and The Netherlands.

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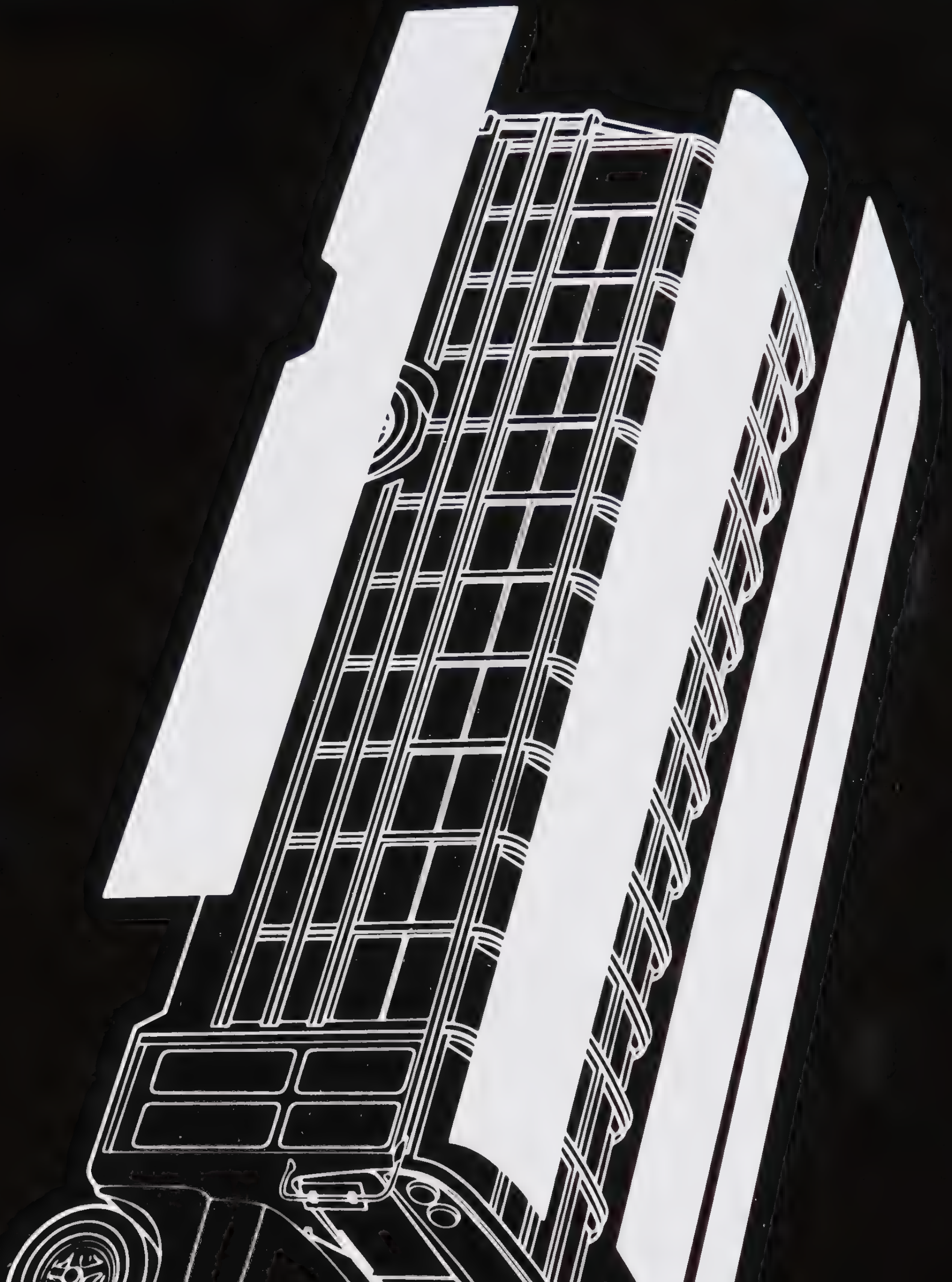
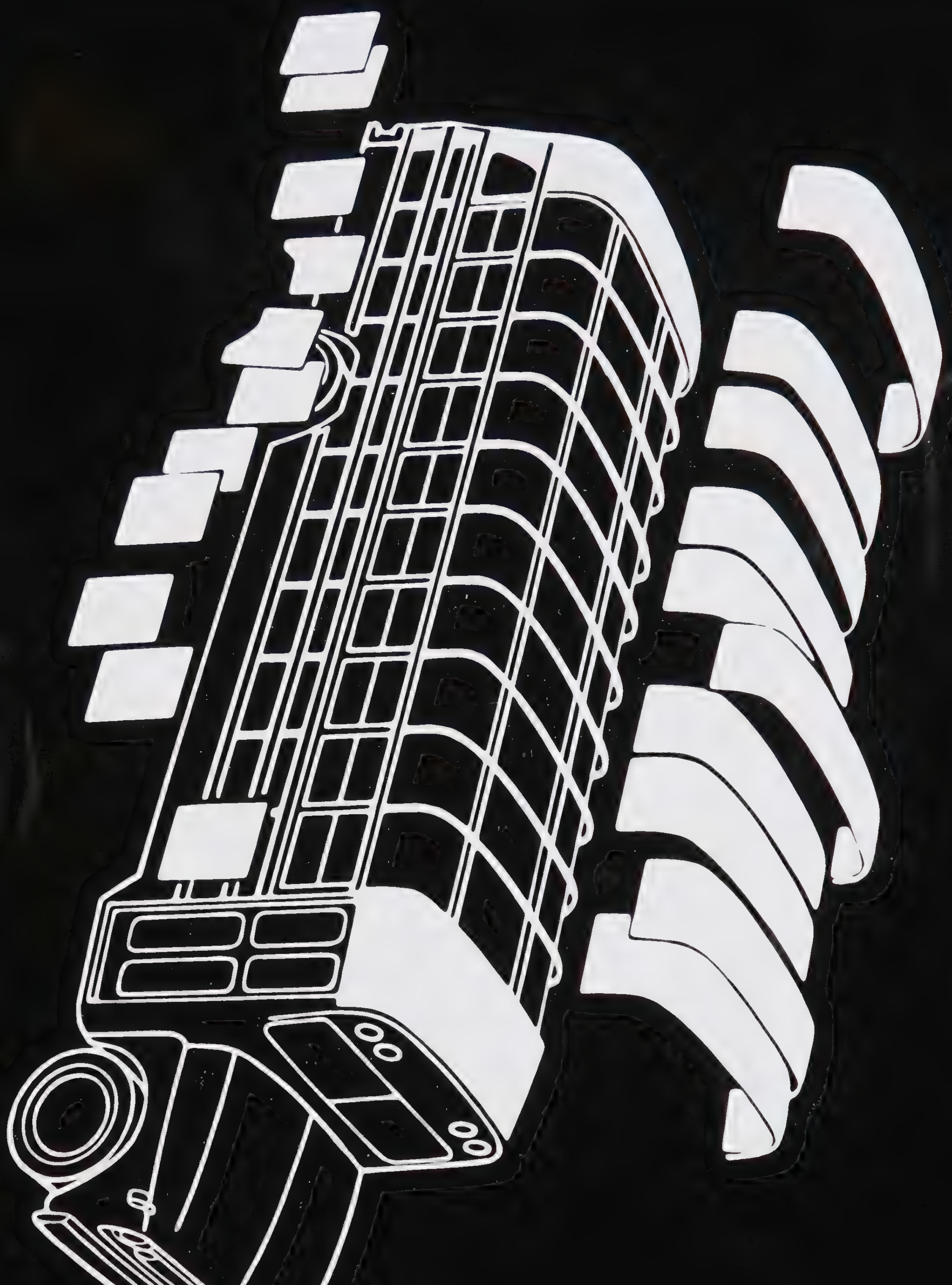
GREATEST STEP FORWARD IN SCHOOL BUS SAFETY in 40 years is claimed for the new Wayne Lifeguard bus being built by Welles Corporation Ltd., Windsor, Ontario.

SCHOOL BUS
COUNTY SCHOOLS NO. 4

LIFEGUARD EXTERIOR. One-piece full-length outer panels provide greater unity and strength in the Wayne Lifeguard bus. At each side, the riders are protected by an immense one-piece exterior shield that extends from window to floor line and the entire length of the passenger compartment. On the roof, three big full-length panels cover the entire bus from front to back.



TRADITIONAL EXTERIOR. In typical school bus outer construction there are numerous -- up to 34 -- transverse roof panels and short vertical side panels with a great many skin joints that open up under some kinds of impact.



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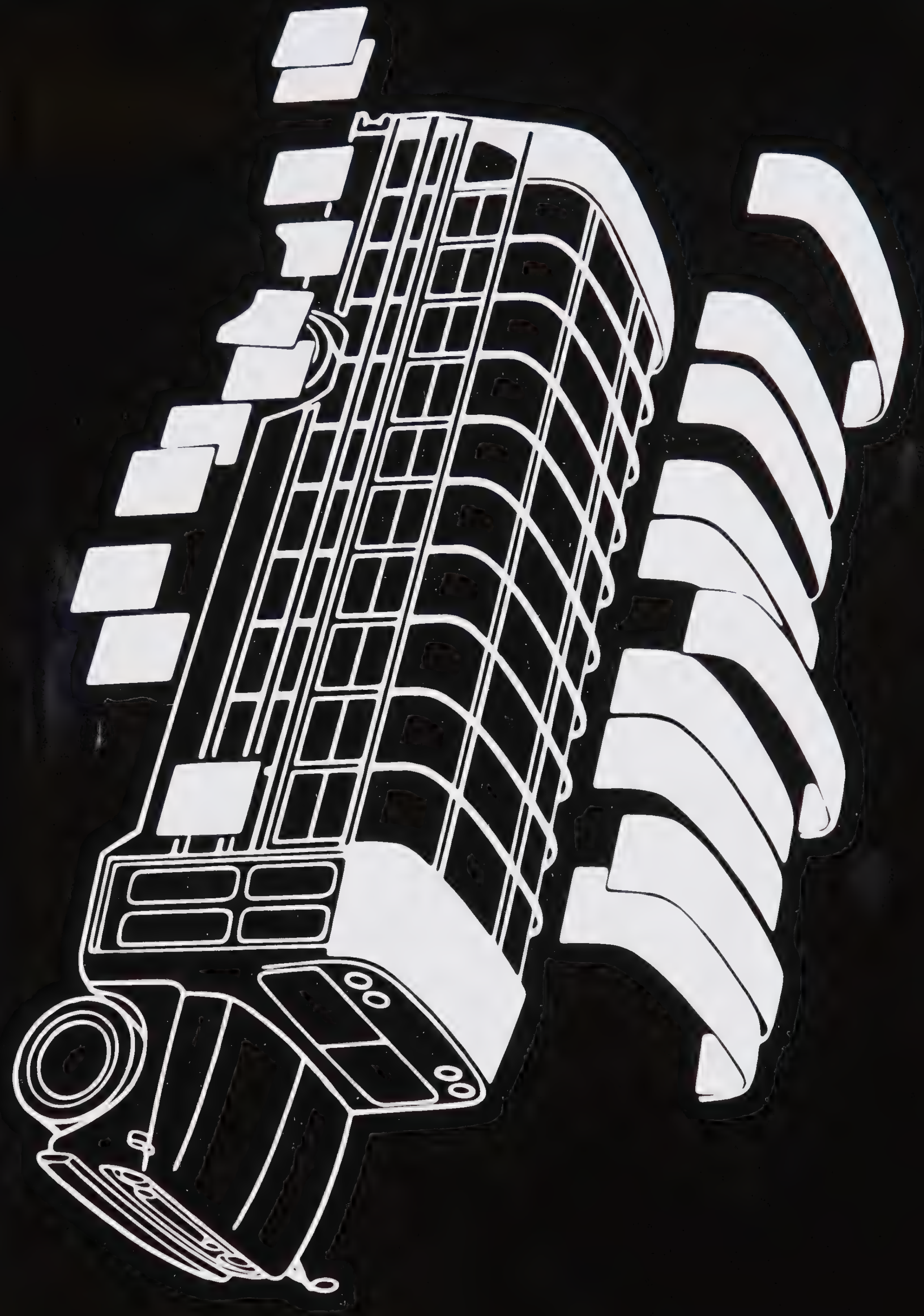
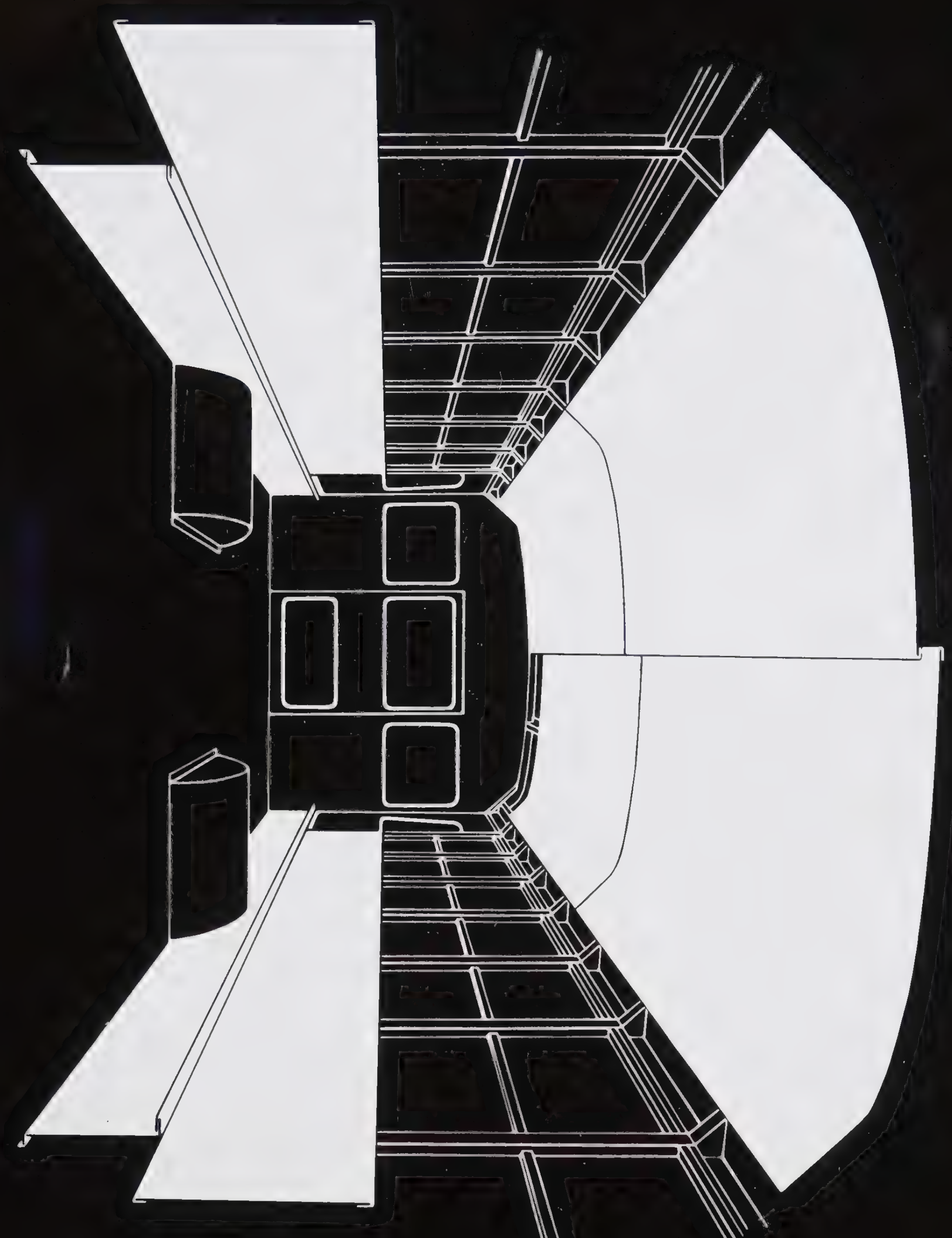
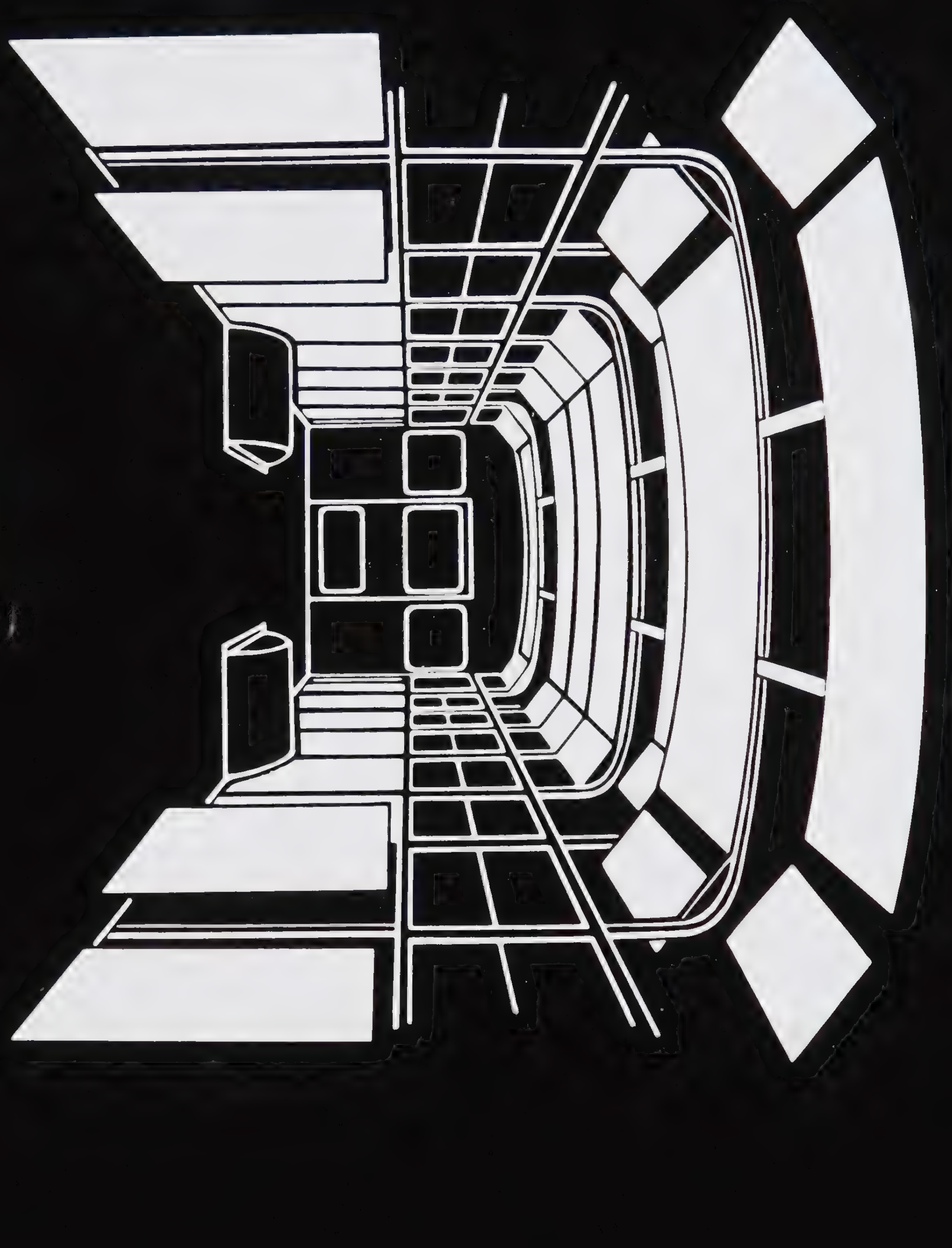


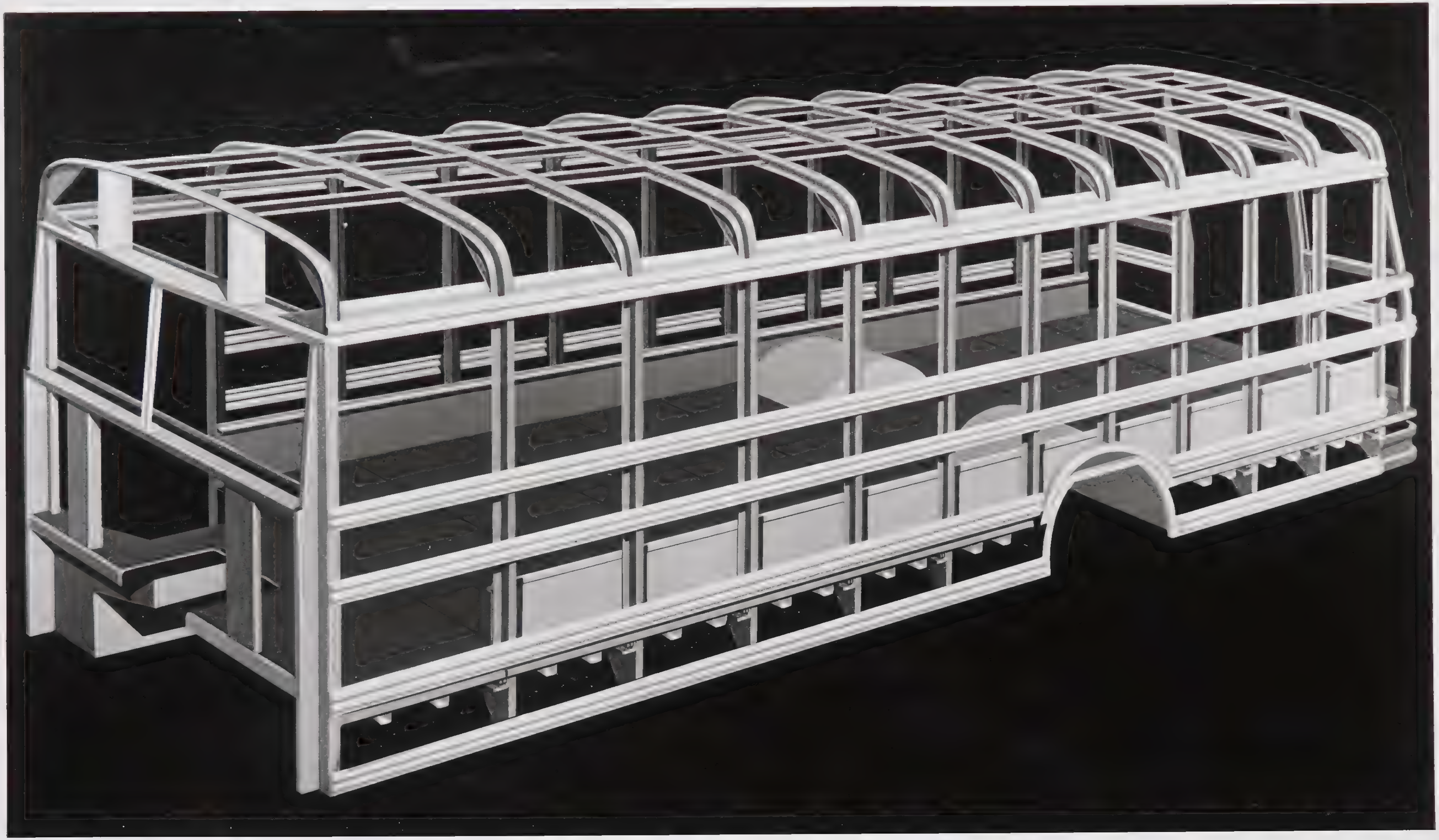
LIFEGUARD INTERIOR. Throughout the passenger compartment, Lifeguard greatly reduces the danger of panel joints and seams that can burst under impact, projecting knife-like metal edges into the interior. From windows to floor, the continuous strength of Lifeguard's one-piece, full-length interior panels eliminate all vertical joints and seams. Instead of hanging a multitude of transverse panels from the roof, as in traditional construction, Lifeguard lines the entire roof and headlining area with no more than six panels. Lifeguard's bigger panels reduce the number of side and roof seams by as much as 91%.



TRADITIONAL INTERIOR. Ordinary school bus interiors have a large number of panels overhead and at the sides. These result in multiple transverse and vertical seams that can open up under impact, exposing sharp metal edges hazardous to passengers.



EXTRA-HEAVY-GAUGE FRAME STRUCTURALS add strength both laterally and longitudinally in the new Wayne Lifeguard bus. Highlights include one-piece bow frames beside and over each seat, full-length crash shields from floor to seat level and double-post construction at all four corners of the body.



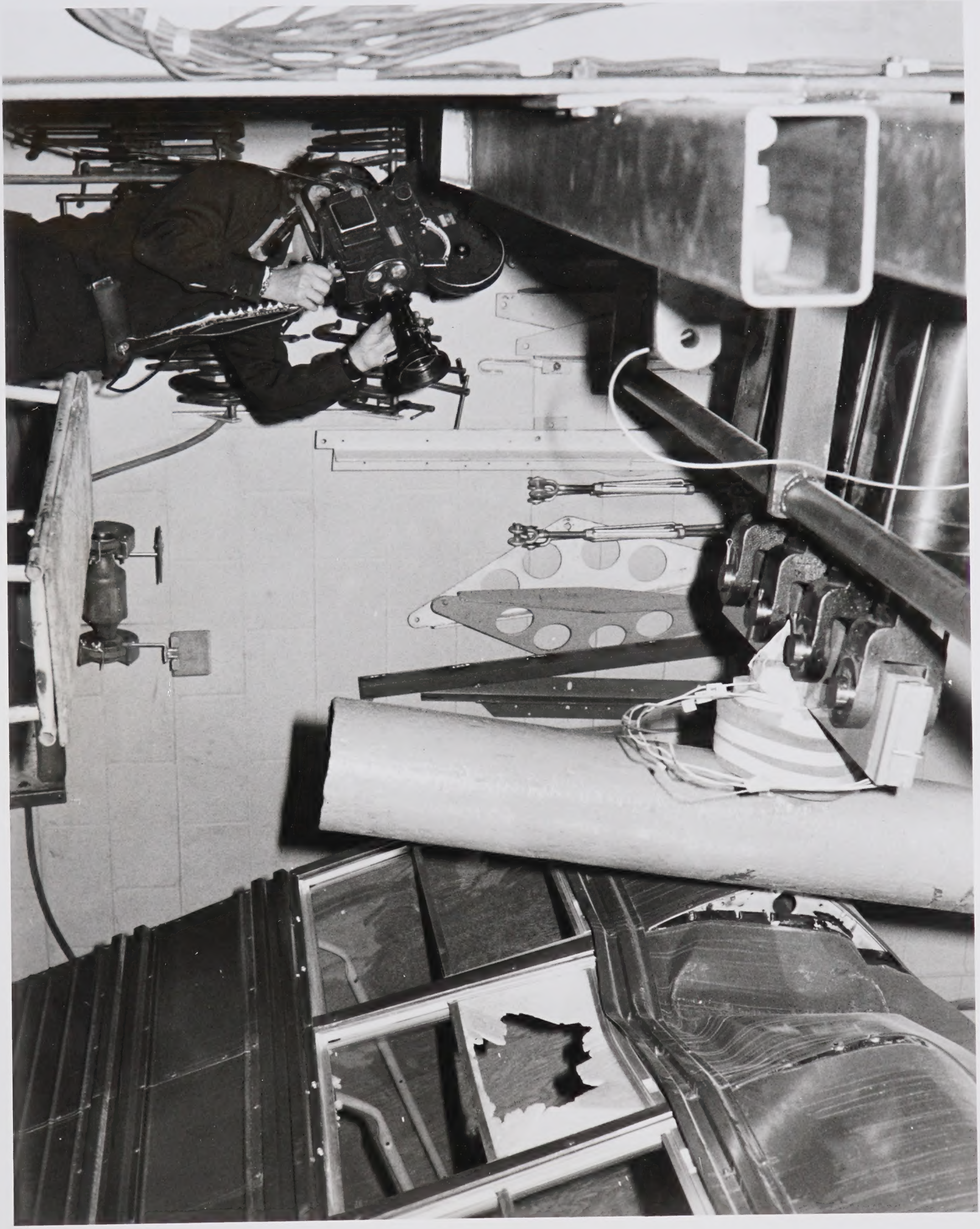
ONE-THIRD LARGER WINDOWS that provide a larger escape opening beside each seat is one of the added safety features of the new Wayne Lifeguard bus. They give the bigger, taller students of today more room to leave the bus quickly in event of an accident. With these new windows, an escape opening depth of 12.2 inches is available compared with 9.1 inches in traditionally built buses. Even so, the top bar of the lowered sash is at a higher level than in previous buses and can be permanently stopped at any desired level.

GIGANTIC ONE-PIECE FULL-LENGTH EXTERIOR PANEL with continuous guard rails is shown here ready for installation on the all-new Wayne Lifeguard school bus on the assembly line. Totally new design of the Lifeguard bus closes impact vulnerability points with massive one-piece panels the full length of the passenger compartment -- inside and out.

PRIOR TO TORTUROUS SERIES OF TESTS, Wayne engineers check out monitoring hook-up which requires generator and oscillograph readout. Wiring at many bus locations connects electronic sensors with stress-recording equipment inside the bus.

SCHOOL BUS
COUNTY SCHOOLS NO. 4
Wayne

TESTING OUTMODED SCHOOL BUS CONSTRUCTION. Section of outmoded school bus is shown immediately after subjection to lab-controlled impact test. Pole-shaped metal ram, under 20,000 lbs. pressure, crashed with bus section at roof line - striking between bow frame members. Note separation of outer skin at seam. (See same test on new Lifeguard school bus construction, for comparison.)



TESTING NEW LIFEGUARD SCHOOL BUS CONSTRUCTION. Section of new Wayne Lifeguard school bus is shown after subjection to 20,000 lbs. pressure impact between bow frame members at roof line. Note that there is no penetration of the outer skin, such as occurred in test of outmoded bus construction. (See same test on outmoded school bus construction, for comparison.)